INTERNATIONAL BULLETIN
OF PLANT PROTECTION

1934 No. 2

DISCOVERIES AND CURRENT EVENTS *

Angola: Locust Movements (1).

1 July 1933. — An ashy-red swarm coming from Vila Henrique de Carvalho passed over the civil post of Chiumbe (civil circumscription of Cassai Sul) flying towards Nova Chaves. The flight lasted 4 hours.

2 July 1933. — A large swarm of *Nomadacris septemfasciata* passed over the mountains of Leba (15 km S. W. of Humpata) and was almost completely destroyed by means of flame-throwers.

3 July 1933. — A very large swarm coming from the west and flying east passed over the civil post of Bungo (civil circumscription of Damba).

Some red swarms coming from the S. (post of Lupize) and flying N. passed at 11 a. m. over Tempué (civil post of Alto Cuito, circumscription of Luchazes), and were 5 km in length.

4 July 1933. — A large swarm of *Nomadacris* coming from the Gambos settled in the vicinity of Chibia. Some of the locusts were killed with flame throwers, and the remainder flew away the following day in the direction of Humpata.

A swarm settled on the flying ground 12 km from Lubango. It was partially destroyed.

5 July 1933. — A swarm of *Nomadacris* coming from the S. E. passed over Jamba in the vicinity of Humpata. Part was killed and the remainder departed the following day towards the N. E. (Chela).

6 July 1933. — A swarm coming from the S. passed over the environs of Sá da Bandeira. It left next day flying N. E.

A swarm extending over nearly 6 km passed at 1 a m. over the post of Condé in the civil circumscription of Gabela.

A swarm passed over the civil post of Quipungo (Chibia) flying N.

A large chestnut coloured swarm coming from the W. and flying E. passed at 11.40 a. m. to 12 over the civil post of Camatambo, circumscription of Damba (Congo). The swarm measured 500 m. in length.

A chestnut swarm nearly 1 km in length passed at 2 a. m. over the civil post of Calandula (circumscription of Ambaca) and next day flew again towards its place of origin.

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from Mr. Jeorge DE BARROS RODRIGUES QUEIROZ, Director of the Laboratory for Plant Pathology and Agricultural Entomology of Loanda, transmitted to the International Institute of Agriculture by the Government General of the Colony.

9 July 1933. — A very large swarm passed over the environs of Chibia and returned the following day flying in an unknown direction.

10 July 1933. — A very large chestnut swarm settled at the civil post of Quipeio (circumscription of Huambo), remained at the same place until 12 July and then flew in the direction of Nova Lisboa. A contrary wind caused the swarm to change direction and settle in the region of Dumbo (civil post of Luimbale). The extent of the swarm was estimated at about 50 × 10 km. It caused slight damage to the European and native crops.

A swarm of *Nomadacris* about 20 km in length settled on the aviation ground at 12 km from Sá da Bandeira. It was partially destroyed.

11 July 1933. — A swarm of about 20 km in length passed at 1200 km (civil circumscription of Moxico) coming from the E.

A very large swarm of about 30 km in length invaded the civil post of Condé (circumscription of Amboin). The locusts caused very serious damage to the European and native crops.

A dark swarm covering 5 × 4 km settled at 1 a. m. at the civil post of Gamba (circumscription of Andulo). It departed at 4 a. m.

12 July 1933. — A very large chestnut swarm covering an area of 20 × 7 km passed at 10 a. m. over the town of Nova Lisboa. It left the following day in the direction of Bailundo (North).

13 July 1933. — Very large swarms were reported in the neighbourhood of Nova Lisboa flying towards Lépi and Bailundo (N. W. and N.).

14 July 1933. — A large swarm coming from the S. E. passed over the environs of Humpata.

17 July 1933. — A large swarm of tropical migratory locusts (*Locusta migratoria migratorioides*) passed at 30 km from Chibia-Gambos flying S. E.

A dense ash-red swarm passed over the civil post of Chiumbe (circumscription of Cassai Sul) causing very serious damage.

A very large dark yellow swarm passed at 2 a. m. over the zone of the civil post of Cuilo Futa (civil circumscription of Maquela do Zombo) coming from the S. and flying N. The passage of the locusts which were flying at a considerable speed lasted 3 ½ hours.

18 July 1933. — A large swarm of *Nomadacris* settled on the mountains of Leba and was partially destroyed.

19 July 1933. — A very large reddish swarm occupying an area of about 12 km passed the night in the region of Chinanga (civil post of Mungo). It departed the following day towards the post of Lunge.

21 July 1933. — A swarm coming from the S. E. settled at Jamba in the vicinity of Humpata. The locusts were to a large extent destroyed.

A large swarm of *Locusta* passed at 20 km on the road from Gambos to Pocolo, flying N. E.

22 July 1933. — A swarm of *Nomadacris* coming from the Gambos settled in the neighbourhood of Chibia.

Two very large swarms one coming from Andulo and the other from the post of Lunge settled on the civil post of Mungo (circumscription of Bailundo). They departed on the 13th and 24th towards Quelinha, causing serious damage in the estates of Silva and Oliveira.

23 July 1933. — A very large swarm settled in the afternoon at Iala. It departed shortly towards the civil post of Bimbe (circumscription of Bailundo).

Very dense swarms passed over the civil post of Lunge (circumscription of Bailungo) coming from the E. and flying W., causing damage to some wheat crops.

A swarm of *Nomadacris* settled at Ioba, near Chibia. It was partially destroyed by means of flame-throwers. The remaining locusts flew next day towards the N. W.

A large swarm passed 9 km from Sá da Bandeira. It departed the following day towards the W.

25 July 1933. — A swarm coming from the S. settled at Jamba in the environs of Humpata and was to a large extent destroyed. The remainder of the swarm departed next day flying N.

A large light-chestnut swarm passed in the vicinity of the post of Quipeio (circumscription of Huambo) flying towards the post of Luimbale.

A chestnut-red swarm coming from the region of Moma and flying towards Bailundo settled in the locality called Chacuma (civil post of Vila Nova).

26 July 1933. — A red swarm covering 3 km in length passed the civil post of Ebo (circumscription of Gabela).

28 July 1933. — A very large swarm of 12 × 5 km passed between Matete and Zanga (district of Malange) causing losses to the farmers of this region.

30 July 1933. — A large swarm passed over the civil post of Quipungo (circumscription of Chibia) flying W.

Other Locust Movements of Unknown Date.

Very large swarms of yellow locusts were reported during this month over the civil post of Dinde and destroyed a large part of the crops.

In the region of Cambo-Camana (Malange) very large swarms were reported which destroyed the cotton fields of Cotonang.

In the district of Malange large swarms devastated the whole district causing very serious damage.

A large swarm invaded the region of the civil post of Condé (circumscription of Gabela).

Very large swarms were reported over the whole zone of the circumscription of Fronteira dos Bundas.

Some of these swarms settled and spread in all directions. These swarms were 500 to 1000 metres in length.

Large swarms were reported also in the circumscription of Quilengues (civil post of Dinde).

Extent of the Damage.

All the districts of the Colony with the exception of Loanda were invaded by locusts. The most affected districts were Huila and Benguela and the district of Mossamedes. It is considered certain that in addition to the swarms mentioned others have invaded the territory of Angola in several places, particularly in the south of the country. According to the information received the territory of Angola is now undergoing an invasion of exceptional severity.

Species causing the Damage.

The greater number of communications received mention neither the species nor colour of the locusts. But according to direct examinations and specimens received it may be said that most of the swarms belonged to the species *N. septemfasciata.* In smaller numbers *L. migratoria migratorioides* were also reported.

As has already been stated in the preceding communication, breeding centres of ash-green locusts were reported at Mossamedes. Specimens of these locusts have been sent to the Imperial Institute of Entomology at London for identification.

The writer has seen in the district of Huila swarms of *Nomadacris* containing a small percentage of *L. migratoria migratorioides*; *L. pardalina,* which has caused such serious damage in South Africa and Rhodesia, has not been reported in Angola.

Natural Enemies.

No other parasite in addition to the Nematode larvae reported in the preceding communication has been recorded.

Centres of Origin and Direction of Flight.

On the basis of the very considerable amount of information collected in the course of tours in the districts of Huila and Mossamedes and on private information it may be stated with certainty that the last egg deposits in the Colony covered very extensive areas in various localities. In the district of Malange the egg deposits were chiefly at Cassange. In the other districts, particularly in those of Bié, Lunda, Moxico and Congo, which are bounded by the adjoining Colonies of Damaraland, Rhodesia and the Belgian Congo, the locusts may have laid, but it cannot be stated with certainty in consequence of the lack of information and as the writer has not himself visited these districts.

Evidently the greater number of the swarms originated within the Colony, particularly in the east and west.

Private information indicates that many swarms come from Damaraland but this fact has not been officially confirmed.

As regards direction of flight it has been observed that wind is the main influential factor but it has also been observed that in the mountainous regions topography also exercises an influence.

Damage.

During the period when all the insects were in the adult state the damage caused was very serious. Devastation of crops has been general and more or less complete, although the worst affected regions were Huila, Benguela and Bié.

Sufficient figures are not available to estimate exactly the extent of the losses but the information available indicates that the revenues of the Colony have as a result of locust attack during the year lost several thousands of ' contos '.

And this is without taking into account the considerable loss to the agriculture of the Colony caused by the moral effect on growers, who are so afraid of losing their crops that they leave their land uncultivated.

Plants Attacked and Plants Avoided by the Locusts.

Maize, wheat, rye and other cereals, several Leguminous plants, vegetables, potatoes, fodder plants, fruit trees such as apple, peach, orange, tangerine, guava, banana and a few indigenous trees, various *Ficus* spp., and foreign trees such as the eucalyptus, have been attacked by locusts, which in certain places have devoured even the bark of the trees.

The chick pea when fruiting was one of the few species not attacked, but before it reached the fruiting stage the plants were attacked.

In several places the locusts have avoided the leaves of coffee, mango and sweet potatoes.

Biological Studies on Locusts.

The Director of the Laboratory for Plant Pathology and Agricultural Entomology has undertaken studies on the subject of locust biology in Angola. Great importance is also attributed to the location of the breeding grounds so that a plan of campaign to be carried out in the next rainy season may be established on a sound basis.

Control Measures.

The anti-locust campaign begun a few months ago is being continued with the means previously described. In the circumscriptions of Humpata, Chibia, Bailundo, Lépi, Caconda and Huambo hundreds of tons of insects have been destroyed.

The arrival of new materials is expected and the granting of further credit which will allow of the development of the control measures.

Eritrea : Locusts (1).

During December 1933 no locust swarms were reported in the Colony.

(1) Communication from the official correspondent of the Institute, Dr. Rolando Guidotti, Chief of the Agricultural Bureau of Eritrea, transmitted to the Institute by the Government of the Colony.

Spain : The Potato Tuber Moth (*Phthorimaea operculella*) (1).

In Spain *Phthorimaea operculella* is not found on the early potatoes, which are grown particularly in the eastern provinces.

The official technical Services carry out extremely careful inspection of the potatoes in the field and in storage and thoroughly inspect shipments in the ports and frontier stations.

India : A Disease of Guava Fruits in the United Provinces (2).

There was an outbreak of 'Mummy' disease (anthracnose) of guava fruits in the Taj gardens at Agra during August and September 1933.

The causal organism was found to be *Colletotrichum psidii*.

Inoculations gave positive results.

Morocco (French Zone) : The Desert Locust (*Schistocerca gregaria*) (3).

10 December 1933. — A large pink swarm passed over Figuig (region of the Frontier).

11 December 1933. — A pink swarm settled in the upper valley of the Oued Rdat, over 30 kms between Ikis and Taddert (region of Marrakech).

16 December 1933. — A pink swarm, 4 × 2 kms, coming from the W. passed over Talsint flying S. E. (region of the Frontier).

20 December 1933. — A pink swarm, 1 × 1.5 kms, coming from the S. W. passed over Skoura to the E. of Taourirt of the Ouarzazat (region of Marrakech), flying N. N. E.

20-26 December 1933. — Pink swarms circling reported at Figuig, Bou Denib, Aoufous and at Erfoud (region of the Frontier).

26 December 1933. — A pink swarm, 3 × 2 kms, settled at the Ida ou Kazou (region of the Haha Chiadma). Departed on the 28th, flying E.

29 December 1933. — A pink swarm, 1 × 0.5 kms, settled at Cap Tafelney (region of the Haha Ghiadma), then flew away N. and settled again at Ikebline.

31 December 1933. — A pink swarm, 5 × 3 kms, coming from the Ida ou Tanan settled at the Aït Tameur (region of the Haha Chiadma).

(1) Communication from the Ministry of Agriculture of Spain, transmitted to the International Institute of Agriculture by the Spanish Embassy in Rome.

(2) Communication from the official correspondent of the Institute, Mr. P. K. Dey, M. Sc. (Lond.), I. A. S., Plant Pathologist to Government, Nawabgunj, Cawnpore, United Provinces, India.

(3) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria*) (1).

District of Cape Delgado. — According to information received since the end of December 1933 it would appear that a swarm was reported at Ancuabe flying towards Muaguide. Other swarms coming from Nivete have invaded the same district, entering at Ocua and Chiure. Locusts were reported at the posts of Mrluco and Muaguide (Circumscription of Quissanga) flying towards Macoza. A swarm coming from Muaguide settled on 28 December at Arimba.

A large swarm coming from the N. settled on 29 December at the other end of the Bay of Porto Amelia and invaded the plantations of Muaguide and Mieze.

District of Nyassa. — Very large swarms were reported at Maniamba and on the shore of the lake, causing the loss of several crops.

District of Tete. — The Circumscription announces the passage of two swarms, one of which coming from the S. E. settled at Chofombo and then flew away N. E., the other swarm coming from the S. passed over the same locality and flew N. Another swarm coming from the W. settled on 14 December at Chofombo and departed on the 16th flying N. A swarm coming from the N. passed over Vila Vasco da Gama and then flew in an easterly direction. A swarm settled at Chengue causing the loss of the native crops. Laying was reported at Chamboto, Nhatuese, Xavier, Chiraze, Bauma, Chapincambiro, Camfambo, Chiquembe, Cauzimbe and Ohale. The Circumscription of Mutarara reports the presence of numbers of hopper bands at the post of Ancuaze; the regions of Maganja and Ilha Inhangoma are completely infested with these hoppers.

District of Quelimane. — Centres of hoppers continue to be located in the Circumscriptions of Alto Molocué, Maganja da Costa and Lugela. Centres are also reported at Gurué and in the lower Maganja.

During November 1933 the destruction of egg deposits was provided for in the Circumscriptions of Zambesi and Massingire.

District of Lourenço Marques. — In several localities of Matola laying is reported and eggs are being collected.

A large swarm passed over the region situated 5 km from Manjacaze, flying N. E.- S. W. on 28 December. The same day a swarm coming from the same direction passed over Cangalo, Faran and Chambuza; part of this swarm passed on 29 December over Manjacaze. At Olombe locusts are causing serious damage to the native crops.

In the estate of Pereira & Mendes 150 hectares of maize have been destroyed.

On 28 December swarms passed over Macia flying in every direction.

(1) Communication from Mr. Julio Alfaro Cardoso, Chief of the Entomological Section of Lourenço Marques, transmitted to the Institute by the Administration of the Agricultural Services of the Colony of Mozambique.

A swarm of over 25 km in length passed on 23 December over Xinavane flying from N. to S. From 23 to 26 swarms were continually passing over Magude. It is estimated that in this Circumscription 80 % of the maize crops have been destroyed.

The first hoppers of *Nomadacris septemfasciata* have been reported between Magude and Xinavane.

On 23, 24 and 25 December very large swarms passed over the regions of Magude, Chobela and Xinavane, destroying almost completely several maize fields.

On 26 December the natives collected 15 petrol tins of eggs at Chibuto, which were destroyed.

A very large swarm passed over Chibuto on 27 December flying E.

Another swarm on 28 December passed over Chibuto flying in the same direction as the preceding.

The whole of this Circumscription is invaded and most of the native crops are destroyed. More than ten tins of eggs have been collected.

A swarm coming from the S. settled on 27 December 2 km to the N. of Vila João Belo.

In the estate of the Cotton Growers' Company of Umbeluzi, 60 hectares of maize were destroyed by locust bands which also deposited eggs in the same place.

The post of Pafuri reported on 22 November the passage of a swarm coming from Southern Rhodesia and flying from N. to S.

Lebanese Republic: Control of Plant Pests (1).

The following is a report of the control campaign of 1932.

Mistletoe (*Viscum album*). — This parasitic seed plant made its appearance on fruit trees in the region of Rachaya, particularly on the almond.

Gangs worked to free the trees from mistletoe in accordance with an Order of the Governor.

Gipsy Moth (*Liparis dispar*). — For the first time this insect invaded the communal forest of Djezzin and nearly succeeded in destroying it ; the caterpillars fed voraciously on the foliage of the trees in the evening and during the night carpeted the ground under the rocks.

An expert of the Agricultural Service and an assistant were sent to the place and control was successfully effected by means of spraying with ' Solar Oil '.

To prevent a future invasion and to have available a more economic means of control the ' Direction ' of Agriculture has requested Mr. de Lépiney, entomologist of the Cherifien Institute of Rabat, to forward a consignment of *Sche-*

(1) Communication from the official correspondent of the Institute, Mr. Philippe KLAT, Chief of the Agricultural Service, Beirut.

dius kuwanae. As soon as it is in possession of this valuable egg parasite, by means of which wide areas of infested land have been saved in Morocco (French Zone) the ' Direction ' of Agriculture will have it distributed in the forest to prevent any risk of the return or spread of the insect.

Cockchafer (*Melolontha vulgaris*). — This was reported in the young fruit plantations in the region of Baskinta, on light sandy soils.

Control was undertaken by an officer of the Agricultural Service using the methods prescribed against this troublesome pest, namely, ploughing and collecting, trap-crops (salad plants), injection of CS_2 into the soil and spreading of superphosphate on the ground.

Potato Tuber Moth (*Phthorimaea operculella*). — The caterpillar did much damage in the potato fields of Northern Lebanon. At Ehden 3 % nicotine solution has been used with success.

Aphis sp. and *Schizoneura lanigera*. — Against these parasites pyrethrum soap, nicotine, and petroleum emulsions were used. The ' Direction ' of Agriculture has already made the peasant familiar with these products which are supplied free of charge by the Agricultural Service.

Locusts. — Locusts have not been reported this year in Lebanon.

Cnethocampa pityocampa. — The only method of control used against this pest of pines is removal of caterpillars with long-handled pruning scissors. The nests are then burnt or buried. Two gangs have been able to destroy by this means about 3000 nests.

Grape phylloxera (*Phylloxera vastatrix*). — The ' Direction ' of Agriculture, carrying out its programme of reconstruction of vineyards in Hasbaya and in Southern Lebanon which have been decimated by grape phylloxera, has distributed and caused to be planted by vine growers 15 000 plants of American vines.

In addition 8000 grafted vines obtained from the Government nurseries at Ras el Ain have been distributed free of charge to growers in the region of the Djebel Amel.

As during past years the ' Direction ' of Agriculture is providing this year for the gratuitous distribution of 30 000 plants of American and grafted vines in the newly infested region of Djezzin, Kfarhoune and Merdjeyun.

Citrus scale insects. — Fumigation with hydrocyanic acid gas and spraying with various insecticides have been carried out this year with ever increasing urgency and as a result of a prize of 10 Lebano-Syrian piastres offered by the Government for every tree treated. More than 60 000 trees have thus been treated during the present season.

A Decree instituting the control of fruits and more particularly of citrus fruits for export has also been submitted to the High Commissioner for approval. The

main idea of this Decree is to incite owners of orchards to disinfect the whole of their orange plantations with a view to making possible the exportation of their products.

Field voles (*Arvicola agrestis*). — As in past years 500 boxes of poison against field voles have been distributed to the farmers who are already made familiar with this method of control.

Nearly 1000 hectares have been freed from voles in the region of Kekea, mainly in the property of the Marquis of Freige, by means of specialised gangs. Control has been effected by means of a virus invented by Dr. Bahr, a Danish scientist.

Southern Rhodesia: Locust Invasion, 1933 (1).

Monthly Report No. 11, October, 1933.

No report has been secured in the colony during the month of any species of swarm locust other than the Red Locust (*Nomadacris septemfasciata*).

Swarms of this species have been in evidence practically throughout the colony, their flights being irregular and not of a definitely migrationary character.

Much damage has been done to young grass and many stockowners have found it desirable to avoid burning their pastures in view of the prevalence of locusts, which attack the new growth with such avidity that only bare ground remains after a heavy visitation. This has been particularly observed near the Eastern border, where locusts are more or less continuously present.

Irrigated crops have been destroyed in certain instances but no general destruction of such crops is reported.

At the end of the month development of the ovaries had only proceeded to a slight extent and there was not yet any indication of appearance of a yellow colour in the ovaries. The male testes were, however, well developed and of a pronounced yellow colour. The typical yellowish breeding coloration of the locusts themselves was still altogether lacking.

In the latter connection it may be stated that certain individuals of both sexes left behind by passing swarms apparently lose their red body coloration and tend to become light brown with pale stripes, the pink suffusion, however, persisting at the base of the hind wings. Such specimens have been mistaken for breeding individuals and led to incorrect reports.

The public should realise that the real breeding coloration is decidedly yellowish and in the case of the males frequently a vivid lemon yellow.

With respect to the Tropical Migratory Locust (*Locusta migratoria migratorioides*) there appears a possibility of eggs having been laid in certain places after these locusts matured in May this year. In this case hatchings of hoppers might occur shortly after the first rains. No such deposits are, however, known and extensive hatchings of this nature are not anticipated.

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. Jack, Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Monthly Report No. 12, November, 1933.

Red Locust (*Nomadacris septemfasciata*).

From the 1st to the 16th of the month a general southerly to south-easterly movement of Red Locusts was apparent, and during this period it is judged that the Colony was invaded by fresh swarms from north of the Zambesi River, Northern Bechuanaland and elsewhere, whilst a lesser number of swarms passed from the Colony into the Union of South Africa and Mozambique Territory.

A marked increase in the number of swarms became apparent as the month progressed. In some cases unusual density of formation in flight was noted.

The swarms invading the country from the north were apparently more advanced towards the egg-laying stage than those previously in the Colony, as from the 15th of the month specimens began to arrive at headquarters showing much greater development of eggs than those previously examined. Specimens showing changes towards the yellowish breeding coloration were noted from the 19th, and on the 21st the first egg-laying was recorded. By the end of the month egg-laying had been reliably reported from eleven districts and unsubstantiated reports of egg-laying had been received from three more districts.

The present position is that swarms more or less in egg-laying condition are present in practically all districts.

From the entomological standpoint, it is interesting to note that Red Locusts kept in cages, which had retained or reverted to the brownish coloration exhibited by this species, when leading a solitary or comparatively inactive life, tended to become black or « Cologne Earth » colour when breeding. This was particularly noticeable in the females. Similarly coloured specimens were secured in the field at a later date and it is suspected that this may be the natural breeding coloration of the « solitary phase » of this species. In these black individuals the dorsal stripe is a pale brown to pale yellow and the central stripes are indistinct. The abdomen, especially in the males, is yellow.

The difference between these specimens and the breeding colour of the usual swarm type, is very marked.

Parasites.

Specimens examined during the second half of the month have shown an indefinite percentage of individuals infested with small maggots in the region of the fat bodies and ovaries. The adult of these maggots is a small fly, belonging to the family *Tachinidae*. The effect of infestation with these maggots is apparently destruction of the ovaries. The percentage infestation is appreciable, but owing to the fact that parasitised specimens are probably more easily caught than healthy ones, it is not possible to estimate this percentage on any reliable basis. It does not appear that the work of these parasites this season will be effective in preventing egg-laying on a very large scale.

Winged locusts have been reported as dying in large number in certain of the more elevated parts of the eastern border of the Colony.

Tropical Migratory Locust (*Locusta migratoria migratorioides*).

Individual fliers of this species have been found associated with swarms of the Red Locust, considerable numbers apparently being present in some cases. No swarms in which this species predominates are, however, known to be present in the Colony.

Tunis: The Desert Locust (*Schistocerca gregaria*) (1).

17 December 1933. — A pink swarm coming from the W. settled at 4 p.m. at Gour al Yazoul (40 kms W. of Tozeur).

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — By a Circular of 9 October 1933 the Minister of Agriculture issued orders allowing the use of 'Calcid' for the disinfection of nursery products for export; directions were given for the use of hydrocyanic acid gas for the disinfection of these products. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Dezember 1933, 13. Jahrg., Nr. 12, S. 112).

*** By a Circular of 2 November 1933 the Minister of Agriculture gave directions concerning the application of the measures published on 27 September 1933 to be followed in the control of phylloxera [see this *Bulletin*, 1934, No. 1, pp. 12-13].

All American vines and hybrids must be examined for the presence of galls of phylloxera. The first inspection must be carried out after 25 June when the shoots are 0.5 to 1 m in length and bear 12 to 14 leaves. The inspection must be carried out as rapidly as possible and must be completed at latest by mid-July. The second inspection must be carried out between mid-July and mid-August.

It must be endeavoured to find the galls of the second generation which are in general to be found on the 9th-12th leaves. The third generation is generally on the 18th-20th leaves. When the galls of the secondary generations have been found it must be endeavoured to detect on the most seriously infected vines the galls produced by the first generation which are generally located on the 2nd-4th leaves. By retracing the progress of infestation in this way the place of its origin will be found. Before proceeding to destroy a centre of phylloxera

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

galls the young leaves bearing the developing galls are to be removed and sent to the Phylloxera Research Centre at Naumburg for determination of the variety of phylloxera concerned.

Protective measures to be repeated each year will serve to destroy any winter eggs deposited on the vines. These measures consist in covering all the woody parts of the vine with a layer of at least 20 cm. of soil. In places where the nature of the ground makes it difficult to apply such a layer of soil it is recommended not to plant American vines.

If this also seems impossible treatment with 4 % lysol is recommended. As an experimental measure it is proposed to try treatment with 8-10 % carbolineum. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Dezember 1933, Bd. V, Nr. 6, S. 164-166).

Germany (Hesse). — By Decree of 10 November 1933 an examination in plant protection has been created at the University of Giessen. This examination will be used to determine whether the candidate possesses the necessary scientific and pratical knowledge for appointment as an official of the Plant Protection Service. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Januar 1934, Bd. V, Nr. 7, S. 202-203).

Germany (Thuringia). — By Police Ordinance of 10 November 1933 the sale of toxic products for purposes of plant protection is restricted to dealers who have received special permission. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Januar 1934, Bd. V, Nr. 7, S. 203-204).

Italy. — By Royal Decree Law No. 1699 of 11 December 1933 a Bureau has been formed, with headquarters at Rome, for the sale of Italian sulphur, the purpose of which is to sell for the producers and in their common interests crude sulphurs (fused) obtained by exploitation of all the mines in the Kingdom. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 22 dicembre 1933, anno 74°, n. 295, pp. 5853-5855).

*** A Ministerial Decree of 3 January 1934 carries regulations for the treatment of sulphur ore used in viticulture and the sale of sulphur within the Kingdom and to foreign markets. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 15 gennaio 1934, anno 75°, n. 11, p. 195).

*** By Ministerial Decree of 11 January 1934 fresh olives and non-oleaginous seeds have among other products been added to the list of merchandise indicated on the Table *A* 'Merchandise of which importation is forbidden' annexed to the Royal Decree Law No. 1923 of 14 November 1926, which was transformed into Law No. 1495 of 7 July 1927. (*Ibid.*, 16 gennaio 1934, n. 12, pp. 215-216).

*** The Royal Decree Law No. 24 of 11 January 1934 gives full and entire effect to the Treaty of Trade and Navigation between Italy and Rumania which was signed at Rome on 5 January 1934.

In accordance with Art. 7 of this Treaty the High Contracting Parties undertake not in any way to interfere with the mutual trade between the two countries by restrictions on imports or exports. Exceptions to this ruling in so far as they apply to all countries situated in similar conditions may be allowed only in the case of prohibitions or restrictions prescribed for purposes of protection of plants against diseases and insect pests. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 26 gennaio 1934, anno 75°, n. 27, pp. 337-390).

Morocco (French Zone). — A Dahir of 3 November 1933 (14 rejeb 1352) modifies the Dahir of 12 May 1932 (6 moharrem 1351) relating to the control of Moroccan fruits and spring vegetables for export. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 17 novembre 1933, XXII[e] année, n° 1099, p. 1125).

*** The Viziriel Decree of 3 November 1933 (14 rejeb 1352) gives effect to the Dahir of 12 May 1932 relating to the control of exportation as applied to consignments of various classes of fruits and vegetables (artichokes, carrots, vegetable marrows, fresh beans, peas, shelled almonds, oranges, tangerines and ' clémentines ') and establishes the amount of the tax to be levied on such consignments. (*Ibid.*, p. 1125).

*** Two Decrees of the Director General of Agriculture, Trade and Land Settlement, dated 9 November 1933, relating to the control of oranges, tangerines and ' clémentines ' for export, prescribe *inter alia* that fruits showing signs of internal or external parasites and more particularly of the fruit fly [*Ceratitis capitata*], should be regarded as unfit for exportation. (*Ibid.*, p. 1126-1128).

*** Eight other Decrees of the Director General of Agriculture, Trade and Land Settlement of the same date and relating respectively to the control of artichokes, carrots, peas, fresh beans, vegetable marrows, tomatoes and potatoes for export, prescribe *inter alia* that products for export must be free from any disease or insect lesion. (*Ibid.*, p. 1128-1134).

*** By Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 25 November 1933, any person selling products with a basis of nicotine or preparations containing nicotine for use in the control of plant parasites must indicate on the delivery note or invoice, on the wrappings, containers or packages and on the advertisements, posters or price lists, the content in nicotine of the product sold. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 1[er] décembre 1933, XXII année, n° 1101, p. 1216).

*** By Decree of the Director of Waters and Forests, dated 2 December 1933, owners or holders of land situated within the territory of the Bureau of Native Affairs of Ahermoumou are authorised to destroy wild boars on their

land at any time and by any means except fire. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 15 décembre 1933, XXII année, nº 1103, p. 1245).

*** By Decree of the Director of Waters and Forests dated 18 December 1933 owners or holders of land located in certain zones of the annex of Tedders (control of the Zemmour) are authorised to destroy on their land by any means except fire rabbits causing damage to their crops. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 29 décembre 1933, XXIIe année, nº 1105, p. 1313).

*** A Decree of 3 January 1934 authorises the destruction of rabbits causing damage to crops in certain zones of the Circle of Loukkos (Ouezzan). (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 19 janvier 1934, XXIII année, nº 1108, p. 59-60).

*** By Decree of 9 January 1934 any person selling compounds of fluorine or preparations containing such compounds must indicate on the delivery note or invoice, on the wrappings, containers or packages and on the advertisements, posters or price lists, the nature of the fluorine compound (cryolite, fluoride of sodium, fluosilicate of barium, etc.), also their content in fluorine. (*Ibid.*, p. 59).

Dominican Republic. — By Presidential Decree No. 792 of 7 August 1933 it is forbidden for phytosanitary reasons to import rice straw and other rice waste used as packing material. (*Revista de Agricultura y Comercio*, Organo oficial de la Secretaría de Estado de Agricultura y Comercio, Santo Domingo, República Dominicana, 1933, vol. XXIV, núm. 49, pág. 823).

*** By Presidential Decree No. 810 of 30 August 1933 in order to prevent the introduction of the ' cochinilla blanca ' (*Icerya purchasi*) into the Republic it is forbidden to import live plants and parts of live plants of species of citrus, acacia, casuarina, and rose from any country unless the consignments are accompanied by an official certificate of the Plant Protection Service of the country of origin stating that the plants or plant parts contained in the consignment have been examined and found free from the scale insects in question.

Consignments found by inspection on entry to be infected will be destroyed. (*Ibid.*, págs. 823 y 824).

*** By Presidential Decree No. 822 of 12 September 1933 importation of potatoes from Spain has been authorised by the ports of Santo Domingo and Puerto Plata on condition that the consignments are accompanied by certificates of the Plant Protection Service of the country of origin stating that the potatoes have been inspected and that in the region where they were grown there is no wart disease (*Chrysophlyctis endobiotica* [*Synchytrium endobioticum*]) nor Colorado beetle (*Leptinotarsa decemlineata*). (*Ibid.*, pág. 824).

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NOTES

Sixth International Botanical Congress. — This Congress will meet at Amsterdam, Netherlands from 2 to 7 September, 1935. It will be divided into ten Sections, including a Mycology and Bacteriology Section and a Phytopathology Section.

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